AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A liquid-crystal display device comprising:

a light pipe including light output means for outputting light, said light output means formed on an upper surface of said light pipe;

a light source disposed near an incident side surface of said light pipe, light traveling along said light pipe being reflected toward a lower surface of said light pipe;

a reflection layer disposed on said lower surface of said light pipe so that said reflected light is again reflected, toward the upper surface of said light pipe, to be transmitted through said upper surface of said light pipe; and a liquid-crystal shutter disposed above said upper surface of said light pipe, said liquid-crystal shutter including liquid-crystal cells and at least one polarizing plate, further wherein

said light output means comprises a repetitious structure of continuous or discontinuous prism-like irregularities, each of said prism-like irregularities comprising:

a short side surface constituted by a slope inclined downward from the incident side surface toward an opposite end of the incident side surface at an inclination angle of less than 45 degrees with respect to a reference plane of said lower surface, and wherein

each of said prism-like irregularities are arranged at intervals of a pitch of from 50 μm to 1.5 mm and further comprise:

a long side surface constituted by a slope inclined at an inclination angle in a range of from 0 to 10 degrees, exclusive of 0 degree, with respect to said reference plane so that the difference in the inclination angle among all of said slopes of the long side surface is within 5 degrees and the difference in the inclination angle between adjacent long side surfaces is within 1 degree,

wherein a vertex of each of the prism-like irregularities is rounded with a predetermined curvature radius.

2. (Previously Presented) A liquid-crystal display device according to claim 1, wherein said light source is disposed adjacent to the incident side surface of said light pipe, and said light source is operable to be switched on and off.

3. (Previously Presented) A liquid-crystal display device according to claim 1, wherein said light output means further comprises:

flat surfaces inclined at a crossing angle of not larger than 10 degrees with respect to said reference plane wherein a projected area of said flat surfaces on said reference plane is not smaller than 8 times as large as a projected area of said slopes on said reference plane.

4. (Cancelled).

5. (Previously Presented) A liquid-crystal display device according to claim 1, wherein a repetitious pitch of said prism-like irregularities is fixed.

6. (Previously Presented) A liquid-crystal display device according to claim 1, wherein a projected width of each of said short side surfaces on said reference plane is not larger than 40 μm.

7. (Previously Presented) A liquid-crystal display device according to claim 1, wherein a ridgeline direction of said prism-like irregularities is within ±35 degrees with respect to a reference plane of said incident side surface.

8. (Original) A liquid-crystal display device according to claim 1, wherein incident light from said lower surface is transmitted through said upper surface at total light-rays transmissivity of not lower than 90 %.

9. (Original) A liquid-crystal display device according to claim 1, wherein said reflection layer on the lower surface of said light pipe is made at least one of selected from the group consisting of gold, silver, aluminum, and a dielectric multilayer film.

10. (Original) A liquid-crystal display device according to claim 1, wherein said reflection layer on the lower surface of said light pipe is in contact with said lower surface of said light pipe so as to be integrated with said light pipe.

11. (Original) A liquid-crystal display device according to claim 1, wherein said reflection layer on the lower surface of said light pipe reflects light while diffusing said light.

12. (Currently Amended) A light pipe comprising:

an incident side surface;

an upper surface;

a lower surface with which a reflection layer is directly integrated; and

light output means formed on said upper surface so that incident light from said incident side surface is reflected toward said lower surface, and rereflected by the reflection layer to be transmitted through said upper surface,

wherein said light output means comprises:

slopes facing said incident side surface and inclined at an angle of less than 45 degrees with respect to a reference plane of said lower surface, wherein

said light output means has a repetitious structure of continuous or discontinuous prism-like irregularities arranged at intervals of a pitch of from 50 μm to 1.5 mm, each of said prism-like irregularities comprising:

said slopes facing said incident side surface; and

a long side surface constituted by a slope inclined at an inclination angle in a range of from 0 to 10 degrees, exclusive of 0 degree, with respect to said reference plane so that the difference in the inclination angle among all of said slopes of the long side surface is within 5 degrees and the difference in the inclination angle between adjacent long side surfaces is within 1 degree,

wherein a vertex of each of the prism-like irregularities is rounded with a predetermined curvature radius.

13. (Cancelled)

14. (Previously Presented) A light pipe according to claim 12, wherein a repetitious pitch of said prism-like irregularities is fixed.

15. (Previously Presented) A light pipe according to claim 12, wherein a projected width of each of slopes facing said incident side surface on said reference plane is not larger than 40 μm.

16. (Previously Presented) A light pipe according to claim 12, wherein a ridgeline direction of said prism-like irregularities is within ±35 degrees with respect to a reference plane of said incident side surface.

17. (Original) A light pipe according to claim 12, wherein said light pipe transmits light through said upper surface at total light-rays transmissivity of not lower than 90 % when said light is incident from said lower surface in a condition that said light pipe does not have the reflection layer.

18. (Original) A light pipe according to claim 12, wherein said reflection layer on the lower surface of said light pipe is made at least one of selected from the group consisting of gold, silver, aluminum, and a dielectric multilayer film.

19. (Original) A light pipe according to claim 12, wherein said reflection layer on the lower surface of said light pipe is in contact with said lower surface of said light pipe so as to be integrated with said light pipe.

20. (Original) A light pipe according to claim 12, wherein said reflection layer on the lower surface of said light pipe reflects light while diffusing said light.

21. (Previously Presented) The liquid-crystal display device of claim 1, wherein said short side surface is inclined at an angle of not less than 35 degrees.

22. (Previously Presented) The liquid-crystal display device of claim 12, wherein said slopes facing said incident side surface are inclined at an angle of not less than 35 degrees.

23. (previously Presented) The liquid-crystal display device of claim 1, wherein a projected area of the long side surfaces on said reference plane is not smaller than 8 times as large as a projected area of the short side surfaces on said reference plane.

24. (Previously Presented) The liquid-crystal display device of claim 12, wherein a projected area of the long side surfaces on said reference plane is not smaller than 8 times as large as a projected area of said slopes facing said incident side surface on said reference plane

25-26. (Canceled).